

Mobile Workstation MW800 Series

Models F5207A, F5217A

User's Guide



6802976C65-O



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Using this Manual

Before using this manual and products it describes, be sure to read the Safety instructions in Appendix A, the Warranty information in Appendix B and the FCC information in Appendix C.

Who Should Use this Manual

This manual is intended for staff that operates the Mobile Workstation 800 in vehicles. This manual assumes that reader is familiar with basic Windows operations. If this is not the case, be sure to read the documentation that came with your version of Windows.

Manual Introduction

The Mobile Workstation 800 (MW800) series is available in two models:

- *F5207- Mobile Workstation*
A multipurpose mobile data computer, that can support the simultaneous operation of two independent applications, each using different display and keyboard.
- *F5217- Mobile Router*
A multipurpose mobile data computer with capability to provide seamless mobility across a number of dissimilar public and private data networks. This device has three distinct Ethernet ports and adds the dead reckoning intelligence to data coming from the GPS receiver.

This manual provides basic information on both models.

This manual is organized as follows:

- **Section 1** provides general information
- **Section 2** identifies mobile workstation components
- **Section 3** provides product specifications
- **Section 4** provides a description of basic operations
- **Section 5** describes installation tips
- **Section 6** describes storage and maintenance rules
- **Section 7** describes how to get assistance from Motorola

The *Appendixes* contain:

- **Appendix A:** Safety instructions
- **Appendix B:** Warranty information
- **Appendix C:** FCC information
- **Appendix D:** Environmental specifications
- **Appendix E:** On-Screen Display
- **Appendix E:** Troubleshooting
- **Appendix F:** Acronyms and Abbreviations

Related Manuals

This manual describes the MW800 and provides basic knowledge about the device. Please note that although this manual refers to hardware and software components supplied with the MW800, it does not provide full component descriptions. For additional information refer to the following manuals:

- Mobile Workstation 800 Series, Owner's Manual for CPU - 6802976C60
- Mobile Workstation 800 Series, Owner's Manual for Display - 6802976C75
- Mobile Workstation 800 Series, Installation Manual - 6802967C20

For documentation of software applications supplied with this product, refer to the help file attached to each application. This manual is designed to supplement the on-line or context-sensitive help installed with each software component. Please review this information to ensure proper use of the product.

On-Line Information

For your convenience, the Motorola website provides up-to-date information about MW800 products. The URL address for the MW800 home page is <http://www.motorola.com>.

Conventions Used in This Manual

Throughout this publication, you will notice the use of WARNING and CAUTION marks. These notations are used to emphasize that safety hazards exist, and care must be taken. Do not proceed beyond a **WARNING** or **CAUTION** until the indicated conditions are fully understood and met.

The following conventions are used throughout this manual:

<i>Italics</i>	Used for emphasis and for new terms.
Bold	Used to indicate keyboard keys or application buttons.
Program -> Motorola -> MW800 CPU-> CPU Manager	Used to designate the location and name of a menu function. For example, Program -> Motorola -> MW800 CPU-> CPU Manager launch CPU Manager program.
NOTE:	Indicates an operational procedure, practice, or condition to which you should pay special attention.
CAUTION:	Alerts you of conditions, which can result in loss or corruption of data, or damage to device.
WARNING:	Indicates a potentially hazardous situation, which, if not avoided, may result in injury. It may also be used to alert against unsafe practices and property-damage-only accident hazards.

Section 1: Getting Started

What is the MW800 Mobile Workstation?

The Motorola Mobile Workstation 800 series is Motorola's highest-performing and most rugged data communication and computing solution. It is specifically designed for the harsh conditions of the mobile environment-areas not suitable for conventional laptop or desktop computers.

The MW800 consists of three separate interconnected components: CPU, Display and Keyboard and can be mounted in dual airbag-equipped vehicles. Using custom-designed cable adapters, the CPU can be connected to the MW800 displays or any 3rd-party LCD, CRT or Flat Screen display. Each component can also be used as a standalone product.

The MW800 design provides:

- Sealed housing
- Protection against extremely high and low temperatures: automatic heating when temperature drops below freezing point; automatic heat reducing measures when temperature exceeds high operational limit
- Protection against extreme shock and vibration
- Withstanding cranking conditions
- Easy access to Personal Card (PC) and Radio Subscriber Identity Module (SIM) card

Getting the MW800 Running

This section guides you through procedures to get the MW800 ready for operation.

Unpacking

Unpack your shipment and check the contents to ensure that you have received all the specified items. Save the packing carton and anti-static plastic bag for storage and shipping. Both the shipping carton and the anti-static bags protect the MW800 components from physical and electrostatic damage.

After unpacking the shipping carton, the following items should be found:

- CPU box
- Display
- Keyboard
- Power cord
- CPU-to-Display cable
- CD with Windows XP Operating System or Windows 2000 Recovery kit
- This *User's Guide*

Inspect all the items. If any item is missing or damaged, notify your Motorola Customer Service representative immediately.

Installation and Connecting to Car Battery

Please, refer to the Mobile Workstation 800 Installation Manual and strictly follow the installation procedure. Be aware that your device can be damaged if improperly installed.

Turning On

Perform the following steps to turn on the MW800.

- Turn the main power switch (MAIN SWITCH) to ON. The switch is located on the back panel of the CPU box
- Press the power button on the CPU box or the display front panel
- Wait until Windows operating system starts

NOTE: The MW800 can be configured so that the vehicle ignition switch, the power button located on the CPU front panel, or the display power button can turn it on. Find more details in Section 4.

CAUTION: Be aware, the CPU and the display have the same Power On scheme.

Turning Off

Use the Windows operating system Shut Down dialog box to turn off the MW800.

NOTE: The MW800 can be configured so that the vehicle ignition switch, the power button located on the CPU front panel, or the display power button can turn it off. Find more details in Section 4.

CAUTION: Be aware, the CPU and the display have the same Power Off scheme.

CAUTION: Remember to save important information before turning off your workstation.

CAUTION: Never shut down your workstation by turning off the main power switch on the back panel of the CPU box while the Operating System is working. Doing so can damage your hard disk.

CAUTION: Be aware, that rapid turning off and on can damage your hard disk. If you need to turn the MW800 on immediately after turning it off, always wait for the shut down process to complete.

Section 2: Taking a Look at the MW800

This chapter identifies the external components of each part of the MW800 and provides a brief functional description.

CPU Box

The front side of the CPU box allows user interface with Power button, PC and radio SIM cards.

Front View

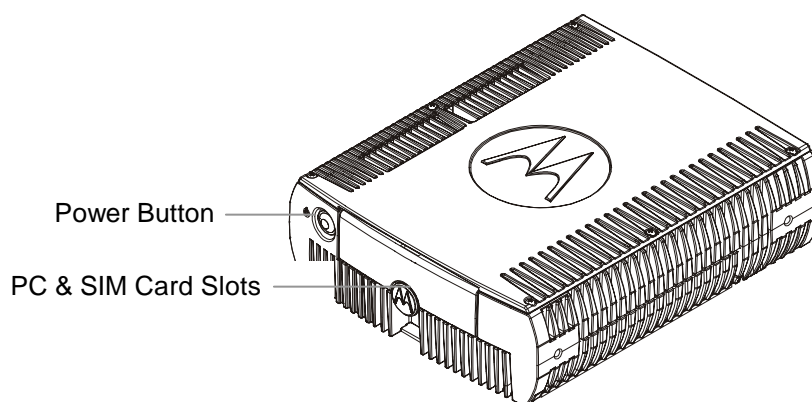


Figure 1. Front View

Power Button	Turns the MW800 power ON and OFF. Note that the main power switch on the rear CPU panel must be switched on before using the Power button.
Personal Card slot	A Personal Card (PC) slot enhances the CPU box performances by enabling the connection of a variety of personal cards that can be used as storage devices, modems, etc. The card slot is completely sealed when the cover is closed.
SIM Card slot	Accepts the SIM card of the internal WWAN radio. The slot is fully sealed when the cover is closed.

Rear-Side Components

F5207A and F5217A models have slightly different rear-side panels as shown below:

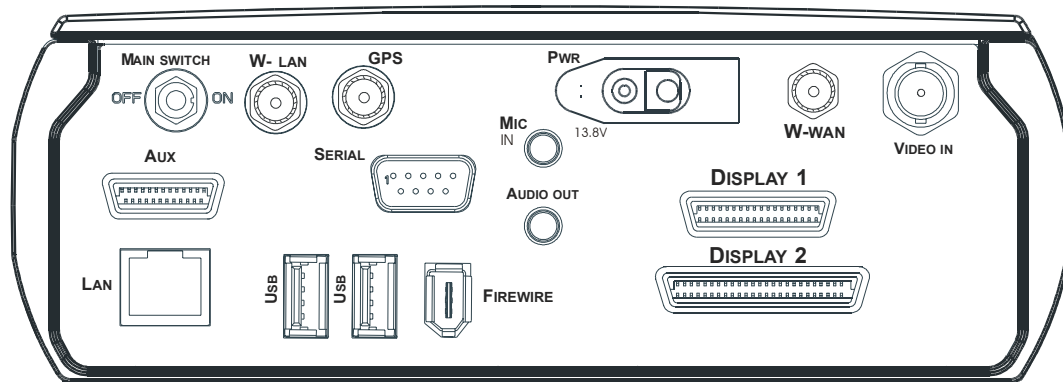


Figure 2. Model F5207A - Rear View

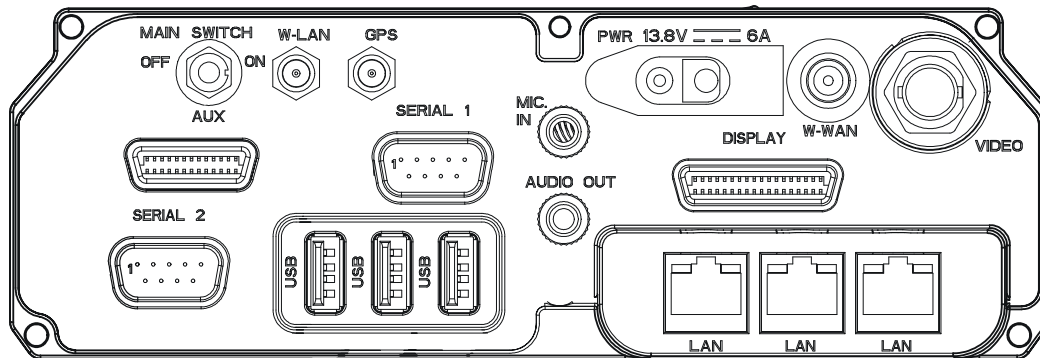


Figure 3. Model F5217A - Rear View

Main Switch

Maintenance power switch. Use this switch to turn off the workstation during maintenance operations. In daily use, the switch should be kept in ON position.

CAUTION: do not switch off before shutting down the operating system.

Firewire

For connecting a Firewire® device (IEEE1394) such as a digital camera, scanner, etc.

NOTE: not applicable for **model F5217A**.

PWR

For connecting the power cord from the vehicle's battery.

CAUTION: Use a standard Motorola power cable with a 15-Amp fuse.

WWAN

For connecting mini-UHF radio modem antenna for GPRS, CDMA, iDEN or Private DataTAC radio.

Mic In	External input jack for Mono microphone for sound recording.
Audio Out	For connecting headphones, external speakers with power amplifier or audio recording device.
Display 1	Connects the CPU to the Display. Carries RGB, USB and audio to the screen.
Display 2	Connects the CPU to the Display. Carries DVI for flat screen interface. Also carries RGB, USB and audio to the screen with additional cable adapters (optional). NOTE: not applicable for model F5217A.
LAN	For connecting the LAN cable. Includes a Link and Active indicators.
Serial 1	For connecting a serial device such as Motorola's VRM modems, printer, mouse, etc. The connection requires a COTS (Commercial Off-The-Shelf) cable (not supplied).
Serial 2	Additional serial connection in model F5217A only.
AUX	Connects vehicle ignition switch, General Purpose I/Os (2 In, 2 OUT), additional USB port, internal modem programming signals as well as 5VDC and car battery voltage outputs. NOTE: model F5217A provides vehicle speed and direction inputs and does not provide additional USB port.
Video In	Composite Video input for connecting external VCR or video camera.
GPS	Connects GPS antenna to the internal GPS receiver (optional).
USB	Each port connects a USB 2.0 or USB 1.1 device.
WLAN	Connects RF antenna (SMA) to the (optional) internal WLAN radio (802.11b/g)

Bottom-Side Components

The Hard Disk Compartment is located at the bottom of the CPU box. The Hard Disk Compartment contains the removable hard disk drive.

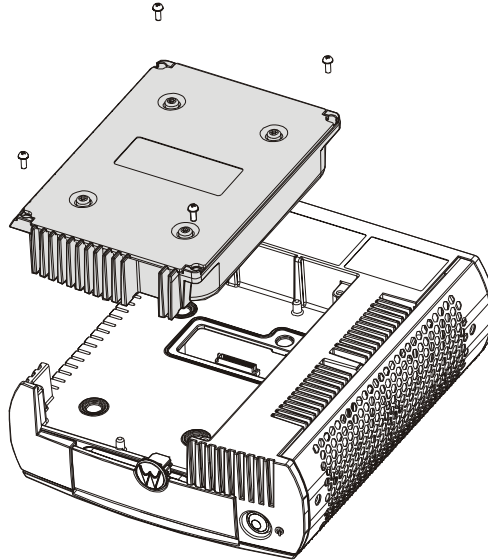


Figure 4. Bottom View – Hard Disk Drive

Top View

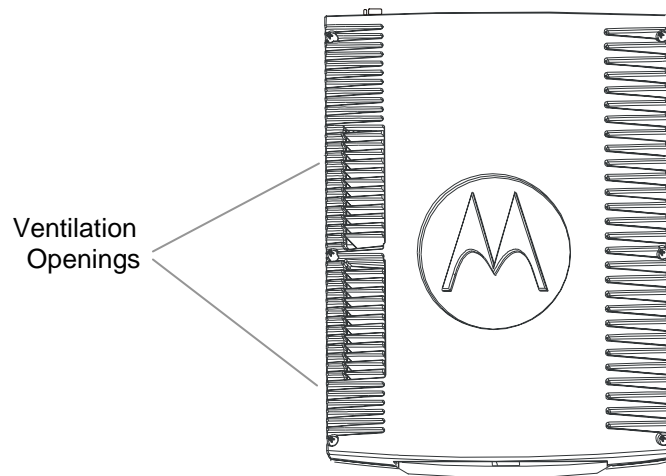


Figure 5. Top View

Ventilation Openings

The openings ensure proper air circulation to prevent overheating. Never cover or block these openings.

Display

This section identifies external display components and briefly describes their function.

Front View

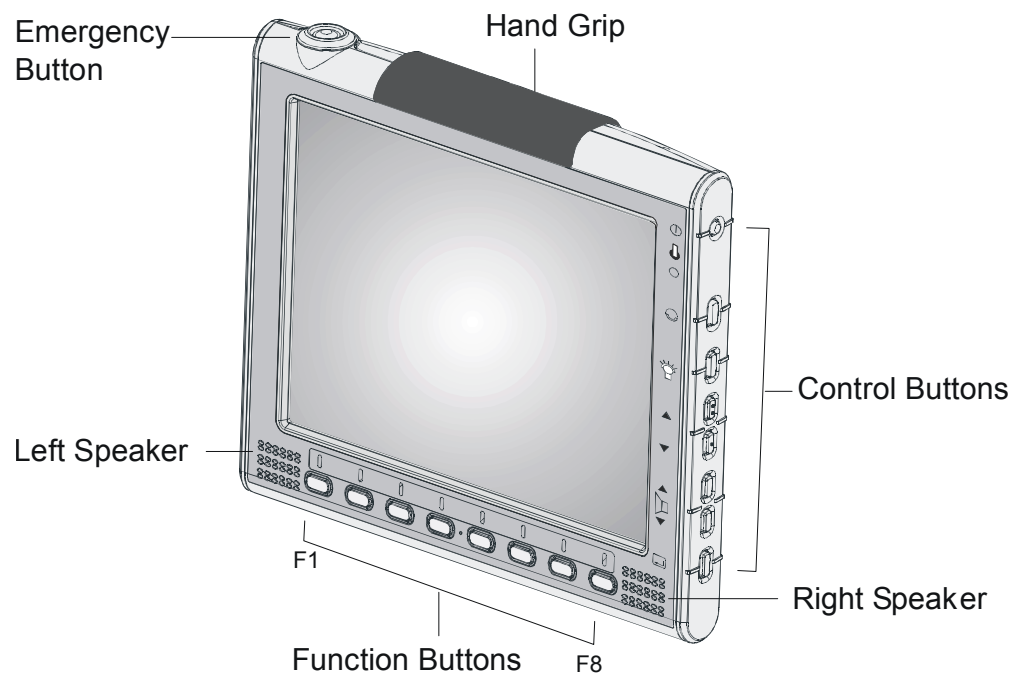


Figure 6. 12.1" Display Components

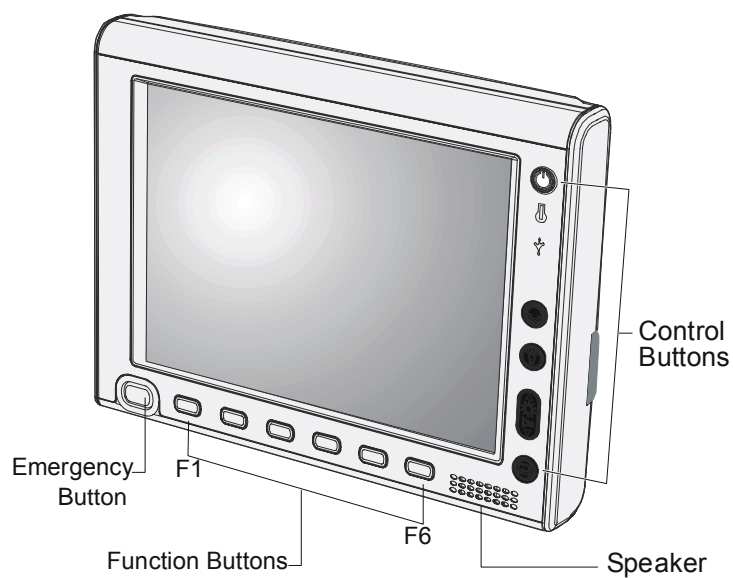


Figure 7. 8.4" Display Components

Speakers

The speakers (two in 12.1", one in 8.4" display) are used for audio and alert signaling.

NOTE: Adjust speaker volume with the Volume Up/Down buttons or with the Volume Control program. The Volume Control program can be found on the Windows task bar (speaker icon).

Function Buttons

The 8 Function buttons (6 for 8.4") facilitate specific operations. The function of each button is set via a pre-installed software application

Emergency Button

Use this button to signal an emergency event to software emergency application, installed in the workstation. The Emergency button becomes functional as soon as the operating system is running.

Touch Panel

The MW800 display is sealed against moisture and has a dirt resistant touch panel, which can be activated with either a gloved finger or a stylus pen.

CAUTION: Re-calibration is required when you see a discrepancy between the touched and displayed positions. Refer to your system administrator for help.

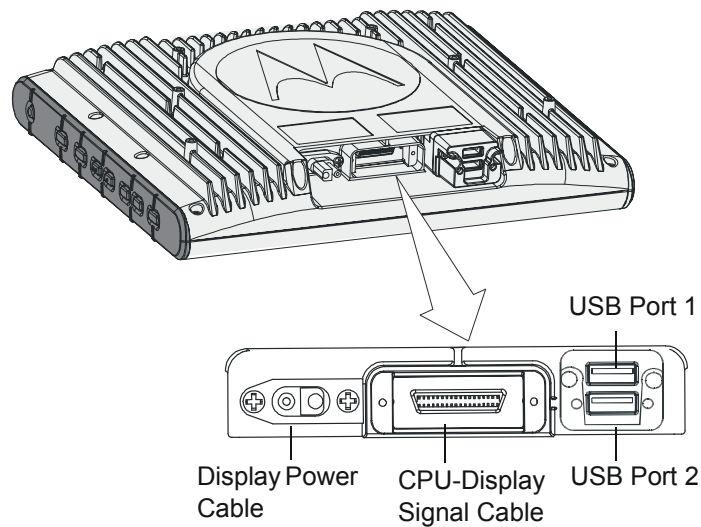
Bottom-side Components

Figure 8. 12.1" Display Bottom View

PWR	For connecting the power cord from the vehicle battery. Use a standard Motorola power cable with a 15-Amp fuse.
CPU Cable	Connects the display to the CPU box.
USB	Each port connects a USB 1.1 device such a keyboard, mouse, etc.

Right-side Components

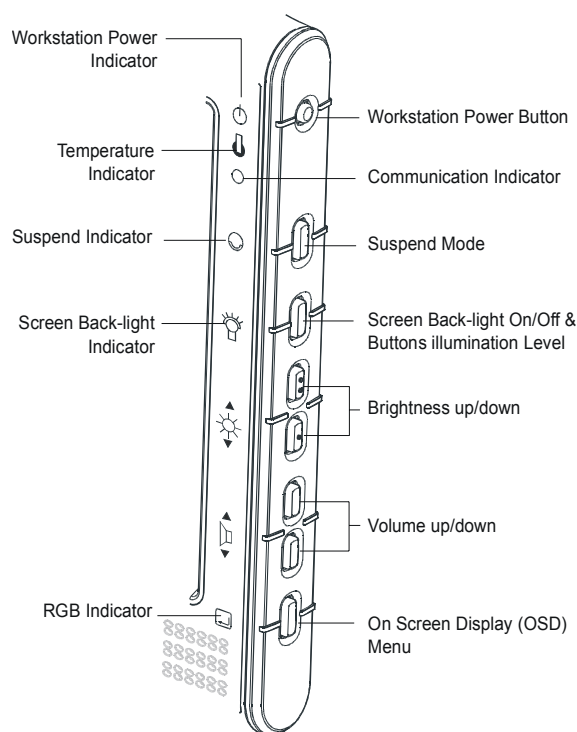


Figure 9. 8.4" Display Control Buttons

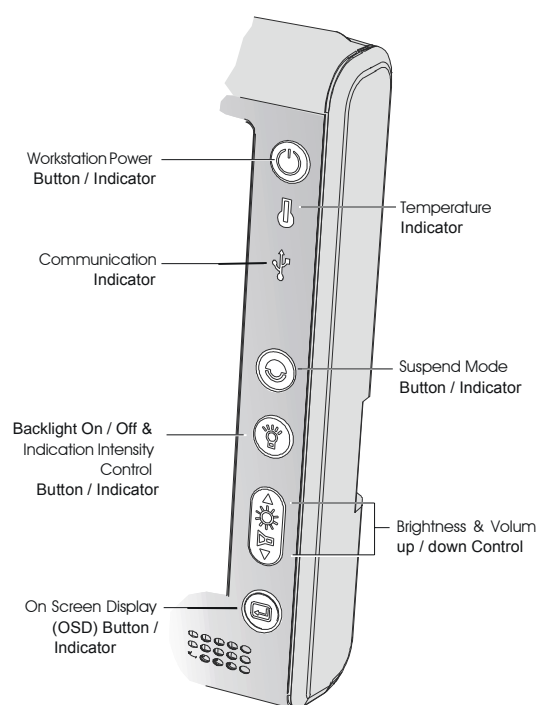


Figure 10. 12.1" Display Control Buttons

Power Button	Turns the MW800 power ON and OFF. This button functions identically as the Power Button on the front panel of the CPU box. Be aware, the main power switch on the rear CPU panel, must be switched on before using the Power Button.
Standby Button	Use this button to go into a low power consumption state (Standby mode). In Standby mode, the workstation enters a power-saving mode, turns off the display backlight and

slows down the processor speed. The workstation radios remain powered on.

Backlight Button

Turns the LCD backlight ON and OFF; provides five levels of illumination to the display buttons and indicators.

Brightness Up/Down Buttons

Increases (the upper button) or decreases (the lower button) a level of the screen brightness. You can set up to 64 continuous brightness levels. Press firmly for fast brightness level adjustment.

Volume Up/Down Buttons

Increases (the upper button) or decreases (the lower button) the level of speaker volume. You can tap up to 64 continuous volume levels. To mute the sound, hold down the Up and Down buttons together for at least one second. Press firmly for fast volume level increase/decrease. **NOTE:** these buttons also serve as navigation buttons for the OSD

OSD Menu Button

The OSD menu button is used to pop-up the OSD menu and adjusts the display's appearance and performance. For details see *Appendix E*.

Display Indicators

Power

For 13.8VDC battery:

Steady green: Workstation is on and vehicle power is OK;

Blinks yellow: Vehicle battery is low (10.2 VDC) during workstation operation;

Steady yellow: Vehicle battery is low (9.4 to 10.3 VDC) during workstation power up.

For 9VDC battery:

Steady green: Workstation is on and vehicle power is OK;

Steady yellow: Vehicle battery is low (less than 9VDC).

Temperature

Off: Normal Operation

Blinks red: Display temperature is extremely high during power on.

Blinks yellow: Display temperature is extremely low during operation.

Communication

Off: Normal operation

Steady blue: CPU box to display USB power problem, or display in programming mode. Check cable connection

Steady yellow: CPU box fails to communicate with the display.

Steady purple: CPU box to display USB power and communication problem.

Standby

Off: Normal operation.

Steady green: Workstation is in Standby mode.

Backlight

Off: LCD backlight is on.

Steady blue: LCD backlight is off.

Link

Steady green: Valid input signal from the CPU box.

Steady yellow & green: NO valid input signal from the CPU box.

Keyboard

The MW800 has an 85-key USB 1.1 keyboard, which can be connected either to the CPU or to the display. The keyboard allows access to all key functions of a full size keyboard; a touch pad with two side-buttons provides standard left and right mouse functionality.

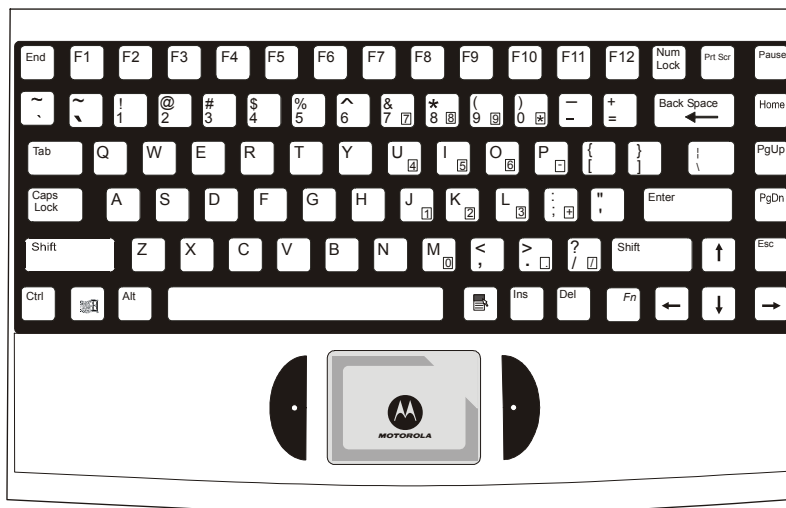


Figure 11. Keyboard

Tips

- To change illumination level of the keyboard backlight, press the **Fn** key and tap on the left or right arrow keys. The level of illumination will change repeatedly from off to maximum in seven steps.
- The keyboard incorporates a power saving feature that automatically turns off the keyboard backlighting after a keyboard illumination time-out is expired. Striking any key restores backlighting.
- To set duration of the keyboard illumination, press the **Fn** key and tap on the **arrow up** or **down** keys. The up and down arrow keys will repeatedly increase/decrease the period of illumination in seven steps of 10 minutes (maximum of 70 minutes).

Touch pad

The touch pad uses the standard Microsoft mouse driver. The user can adjust the pointer speed in the "Basics" dialog box of the "Mouse Properties" section of "Control Panel" to his/her personal preference. Tapping with your finger simulates a left mouse button "click". Two taps simulates a "double click". Use the buttons on each side of the touch pad the same way you use standard mouse buttons.

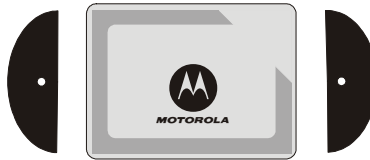


Figure 12. Keyboard Touchpad

To use the touch pad:

- Place your finger on the pad and move your finger in the direction you want the cursor to move. The faster you move your finger, the faster the cursor moves across the screen.
- Roll your finger from side to side to move the cursor short distances.
- Quickly tap your finger on the touch pad to click on an item.
- Tap your finger twice to double-click on an item.

Tap and hold to drag, draw, and highlight.

Section 3: Specifications

Specifications

Size

- **CPU:**
Width: 7.75" (19.7 cm); Depth: 9.45" (24.0 cm); Height: 2.74" (6.95 cm)
- **12.1" Display:**
Width: 12.2" (31 cm); Depth: 10.6" (26.9 cm); Height: 2.2" (5.6 cm)
- **8.4" Display:**
Width: 9.1" (23.1 cm); Depth: 7.1" (18.1 cm); Height: 1.69" (4.3 cm)
- **Keyboard:**
Width: 7.75" (19.7 cm); Depth: 9.45" (24.0 cm); Height: 2.74"

Weight

- **CPU:** 7.7 pounds (3.5 kg)
- **12.1" Display:** 8.4 pounds (3.8 kg)
- **8.4" Display:** 3.3 pounds (1.5 kg)
- **Keyboard:** 2.2 pounds (1.0 kg)

Power source

- Vehicle battery, negative ground.
- Voltage Input Variation 13.8 VDC \pm 20% with no loss of functionality.
- Power loss compensation during engine cranking in standard 13.8 VDC battery system.
- Current consumption at 13.8 VDC:
 - Maximal 5A
 - Typical 3.5A (CPU - 1.5A, Display – 2A)
 - Standby 0.4 A
 - Power off 0.05 A.
- Capability to support 9 VDC vehicle battery.
- Vehicle ignition switch sensing.
- Electrical Transients meet ISO7637-1 standard.
- Car battery voltage (1A maximum) and 5 VDC (1A maximum) power outputs to peripherals from AUX port. Voltage level at 12VDC output is equal to car battery voltage input.

Environment

- Storage temperature: -40° to 158° F (-40° to +70° C)
- Operating temperature: -22° to 158° F (-30° to +70° C)
- Humidity: 90 to 95% Relative humidity at 50° C for 8 hours

Refer to *Appendix E* for detailed Environmental specifications.

Features

Operating System:

- Windows XP Pro or Windows 2000.

Basic Processor (other options available):

- Intel Pentium M (Centrino) #715 1.5 GHz processor.

Memory (other options available):

- Double data rate (DDR) synchronous expandable dynamic random access memory (DRAM) 256 MB.

Mass Storage (other options available):

- Hard disk 40 GB, 5400 rpm with three-dimensional shock absorbers.

Keyboard

- 85-key USB keyboard. English only or dual language keyboards are available.
- Access to all the key functions of a full size keyboard
- Touch pad and right and left mouse buttons.
- Backlight control with seven illumination levels
- Backlight duration control

Display

- Two sizes (12.1" and 8.4"), three models (12.1" XGA high brightness& SVGA standard brightness, 8.4" SVGA standard brightness)
- Color display using TFT technology
- Tempered glass covered by a protective film
- Internal heater, backlight operation in low temperatures.
- LED indicators for alarm reports and workstation status.
- Two speakers on the front of the display panel (one speaker in 8.4" model)
- Two USB 1.1 connectors (second USB port is optional in 8.4")
- 8 function buttons (6 in 8.4")
- Volume, brightness, standby and backlight control buttons
- On-Screen Display
- Emergency button
- Workstation power button

Video controller

- Integrated 2D or 3D graphic and multimedia accelerator.
- 32MB Internal CACHE memory

External CPU Interfaces

- 2 USB 2.0 connectors for F5207A, 3 USB 2.0 connectors for F5217A
- PC card slot (Type II)
- SIM card slot

- RJ45 Ethernet connector
- RS-232 DB9 connector for F5207A, 2 RS-232 DB9 connectors for F5217A
- Microphone jack
- Stereo headphone jack
- Firewire (IEEE1394) port for F5207A
- Composite video input (PAL or NTSC)
- External RGB display connectors (Display 1)
- External RGB or DVI display connector (Display 2) (Primary & Secondary functionality is configured by OS), F5207A only.

Internal Interfaces

- Mini-PCI

Auxiliary Port (26-pin)

- Ignition Sense
- 4 TTL level I/O ports (two inputs and two outputs)
- Car battery voltage and 5 VDC power outputs (1A max)
- USB 2.0 port signals (only in F5207A)
- Vehicle speed and direction inputs (only in F5217A)
- Internal WWAN Modem Programming signals

Options

- Processor: Intel Pentium M (Centrino) #745 1.8GHz or Celeron M #320 1.3 GHz.
- Memory: 256, 512MB or 1GB.
- Mass Storage: Hard disk 40 or 60 GB, 5400 rpm with three-dimensional shock absorbers or 2GB Flash memory drive.
- Integrated Trimble GPS module supporting TSIP, TAIP and NMEA protocols through internal COM2 serial port.
- Integrated ANTARIS GPS module with Dead-Reckoning intelligence on the GPS data coming from the GPS and NMEA support through internal serial COM2 port (only for F5217A).
- Integrated Wireless LAN module (IEEE 802.11b/g) through internal Mini-PCI slot.
- Integrated Radio module. One of the following wireless radio modems may be installed through internal COM3 serial port: GPRS, CDMA, iDEN or Private DataTAC.
- 12.1" XGA display, 1200 NIT (1200 Cd/m²) brightness, 1024 x 768 pixels.
- 12.1" SVGA display, 350 NIT (350 Cd/m²) brightness, 800 x 600 pixels.
- 8.4" SVGA display, 350 NIT (350 Cd/m²) brightness, 800 x 600 pixels.
- Integrated Bluetooth communication - only on the 12.1" displays.

Section 4: Basic Operations

This chapter provides basic information about the use of the MW800. It describes the following operations:

- Power On
- Power Off
- Reset
- Access to PC and SIM cards
- Volume Control
- Standby

Power On

Ensure that the main power switch (MAIN SWITCH) on the rear CPU panel is in the ON position.

Normal operation

There are a number of ways to start the MW800.

If the MW800 power is connected through the ignition and configured to be powered only from the ignition switch, insert the car key into the ignition switch and rotate it to ACC position.

If the MW800 power is connected directly from the battery (and not through the ignition switch) and configured to be powered only from the power button, press the CPU or display power button.

If the MW800 power is connected through the ignition and configured to be powered from both the ignition switch and the power button, insert the car key into the ignition switch and rotate it to ACC position or press the CPU or display power button.

The MW800 will start up with its pre-installed operating system. This process takes some time; please, wait for the end of operating system loading.

Extreme Temperature Conditions

Your device powers up only when the temperature is within the operating range. When the ambient temperature drops below the low operational limit, an automatic heater will kick in and maintain the working conditions for up to 16 hours or an alternate pre-defined time.

NOTE: Your device performance might be slightly degraded (both boot up time and sustained operations) during extreme temperature conditions. Normal operation will resume when the ambient temperature returns to the operating range.

Discharged Vehicle Battery

If the power source is a standard 13.8V car battery, the device will normally power up when the voltage level exceeds 10.3 VDC.

If, during normal operation, the battery voltage drops below 10.3 VDC the device will provide Low Battery indication - workstation power indicator blinks yellow. If the voltage continues to drop, the device automatically powers off at 8.5 VDC.

If the power source is a 9V battery, the device will normally power up when the voltage level exceeds 9 VDC.

Power Off

CAUTION: Never shut your workstation down by turning off the main power switch (MAIN SWITCH) on the back panel of the CPU box while the Operating System is working. Be aware, this operation may damage your hard disk.

CAUTION: The MW800 shut down scheme is configurable to one of three selections: via the vehicle ignition switch, from the CPU or Display power button or from the display power button or a combination of ignition sense and power buttons. Be aware, the CPU and the display have the same shut down scheme.

CAUTION: Remember to save important information before turning off your workstation.

Normal Operation

You should always shut your device down from the Windows Shut Down process.

If the MW800 is connected through the ignition and configured to be powered off from the ignition switch, rotate the car key to OFF position. The device will automatically shut down when the Ignition shutdown time-out expires.

NOTE: Windows pop-up dialog will warn you about power off from the ignition switch. You can cancel this operation before the Ignition shutdown time-out expires.

If the MW800 is not connected through the ignition but is configured to be powered off only from the power button, momentarily press the Power button. The device will shut down.

CAUTION: If the system does not respond, you can turn the device off by pressing and holding the power button for 6 seconds or more. Be aware, this hardware power off may damage your hard disk.

Extreme Shut Down

Some extreme events may cause your device to power off. If any of these events occurs, you will be warned about it and asked to immediately save your work. The events are:

- Internal temperature drops below the low operational limit.
If during operation the ambient temperature exceeds the operating temperature range or internal temperature drops below the low operational limit for any reason, the CPU processor eventually powers off. A message **"CPU temperature is low. The system will shutdown in 3 minutes. Please save your work"** will warn you about this event.

CAUTION: If extremely low temperature is the reason for shut down, never turn on the device until it warms up to normal operating temperature as indicated by the temperature LED on the front panel of the MW800 display.

- Internal temperature exceeds the high operational limit.
If during operation the ambient temperature exceeds the operating temperature range or internal temperature exceeds the high operational limit for of any reason, the CPU processor gradually slows down, and eventually powers off. A message **"CPU temperature is high. The system will shutdown in 3 minutes. Please save your work"** will warn you about this event.

CAUTION: If overheating is the reason for shut down, never turn on the device until it cools down to normal operating temperature.

- Vehicle battery is discharged
A message **"Vehicle Battery is Low. The system will shutdown in 3 minutes. Please save your work"** will warn you about this event.
- Battery voltage drops below the 8.8V limit for 20 seconds or more.
The device will execute critical shut off and power itself off.

Resetting

You may have to reset the MW800 if an error occurs and the program you are using locks up. Be aware that the system may have been processing data when it locked up. If you are sure the system operation has stopped and you cannot use the *'Restart'* function of the operating system, reset your device. Be aware that resetting will cause unsaved data to be lost.

To reset the device, press the <Ctrl+Alt+Del> keys, and select the *Shut Down* option from the Windows shut down screen.

CAUTION: If the system does not respond, you can turn the device off by pressing and holding the power button for 6 seconds or more. Be aware, this hardware power off may damage your hard disk.

Personal Card

To insert a Personal Card into the slot:

- Pull the door latch and open the PC slot door.
- Align the card with the slot with the label side up
- Insert the card into the slot until it locks in place.
- Close the door latch

To remove a Personal Card from the slot:

- Pull the door latch and open the PC slot door.
- Click on the PC indicator on the PC Windows application.
- Highlight the name of the card and then click the Stop button.
- When prompted, press the Eject Button and pullout the card from the slot.
- Close the door latch

If you want to use the card again immediately after ejecting it, pull it out about one inch and then push it back in.

CAUTION: Do not insert or remove a card when the MW800 is in standby mode. Before you insert or remove a card, make sure that you exit all software applications that access the card.

SIM Card

To insert a SIM card into the slot:

- Pull the door latch and open the PC slot door.
- Align the card with the slot with the golden SIM side up (TBD)
- Insert the card into the slot until it locks in place.
- Close the door latch

To remove a SIM Card from the slot:

- Pull the door latch and open the PC slot door.
- Push the button and pullout the card from the slot.

CAUTION: Inserting/removing SIM card when MW800 is running can corrupt SIM card information. Please, insert/remove SIM card when MW800 is off.

Volume Control

Adjust the speaker volume with the Volume Up/Down buttons or with the Volume Control program. The Volume Control program can be found on the Windows task bar (speaker icon).

When using the Volume Control program note that the “Audio Out” outlet, on the back panel of the CPU box, is referred to as “Headphones”

The display speakers are referred to as “Volume Control” For example, to assign the volume control bar to the “Audio Out” outlet, on the back side of CPU box, perform the following:

- Click on the speaker icon on the Windows task bar.
- Click on *Options* and select *Properties*.
- From the *Options* dialog box, check the *Others* option and select *Headphones* from the drop menu.

NOTE: if your display unit includes a Bluetooth component, this application also allows commutation of audio stream to the Bluetooth device.

Standby

To enter low-power state (standby), press the Standby button on the right display side. In standby, the MW800 enters a power-saving mode, turns off the display backlight and slows down the workstation speed. The workstation radios remain powered on. To resume normal operation again, touch the display panel or press any display function key.

Section 5: Installation Tips

Connection of the MW 800 CPU Box to a Third party Display

An optional cable adapter (FKN8144) enables you to interface the MW 800 CPU box with most 3rd party displays. The cable adapter connects to the standard CPU-Display signal cable. The cable adapter is shown in the figure below.

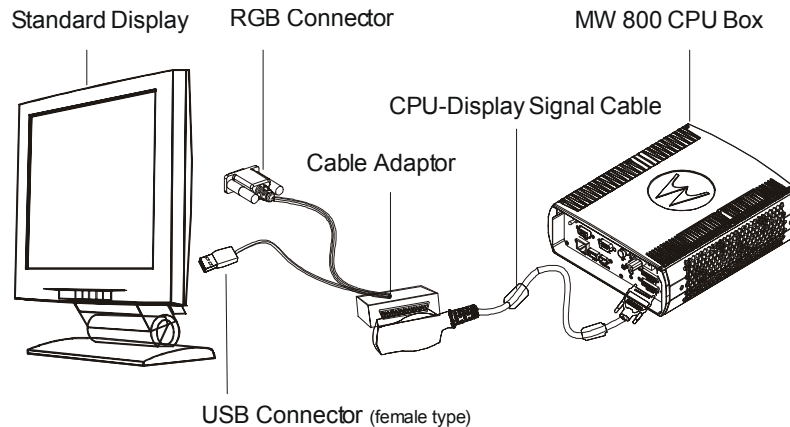


Figure 13. Connecting the CPU box to a 3rd Party Display

Connection of MW 800 Display to 3rd Party Personal Computer

An optional cable adaptor enables to interface the MW 800 display with most standard personal computers. The cable adaptor connects to the CPU-Display signal cable. The cable adaptor is shown in the figure below.

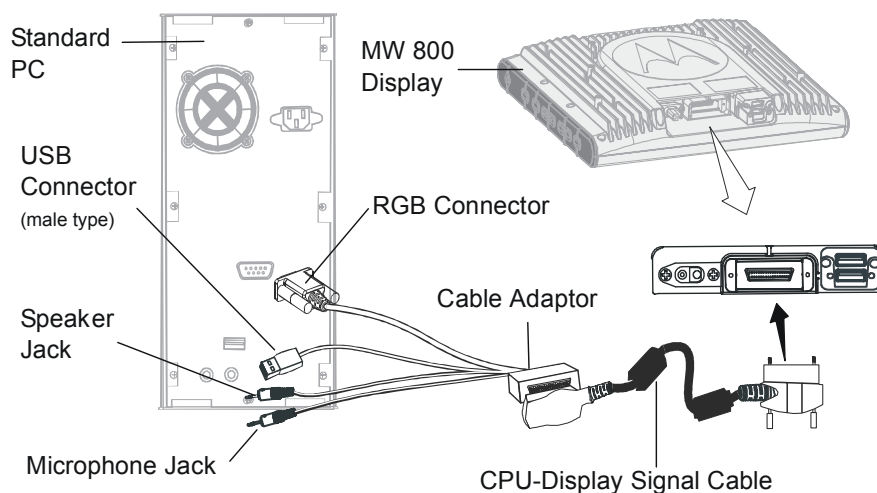


Figure 14. Connecting the Display box to a PC

Tips for F5217A Installation

- Use the AUX 26 pin cable Motorola p/n 3087563V93 for interface to the vehicle to access to vehicle speed and direction outputs.

Reading the vehicle speed signals

- Connect the “+” terminal of the vehicle speed signals to the AUX port pin1 (black wire).
- Connect the “-” terminal of the vehicle speed signals to the AUX port pin2 (brown wire).

Reading the Forward /Backward drive direction signals

- Connect the “+” terminal of the vehicle forward/backward drive direction signals to the AUX port pin 3 (red wire).
- Connect the “-” terminal of the vehicle forward/backward signals to the AUX port pin 4 (orange wire).
- If the vehicle forward/backward signals connection is not utilized, connect AUX port pin 3 (red wire) to the 5VDC and AUX port pin 4 (orange wire) to the GND.

NOTE: 5VDC signal is available on AUX port pin 25 (blue wire 24 AWG), GND signal is available on AUX port pin 11 (gray wire 28 AWG)

Section 6: Maintenance

Cleaning the Keyboard

- Spray some ethyl or rubbing (isopropyl) alcohol on a dry soft cloth.
- Wipe the keyboard surface with the cloth.
- Let the keyboard dry for few minutes.

If the keyboard is very dirty and sticky as a result of a liquid spill, contact a service technician.

CAUTION: avoid spraying cleaner directly on the keyboard; always ensure that no liquid drips on the keyboard.

Cleaning the Display

- Wipe the display with a dry soft cloth.
- If your display has stains, spray some ethyl or rubbing (isopropyl) alcohol on a dry soft cloth and wipe the display surface.
- Let the display dry for few minutes.

If the display is very dirty, contact a service technician.

CAUTION: Do not use water, window cleaner, acetone, aromatic solvent or dry, rough towels to clean the screen.

Section 7: Getting Assistance from Motorola

For your convenience, the Motorola website provides up-to-date information about the MW800.

The URL address for the MW800 home page is <http://www.motorola.com>.

This site includes general information about the device, as well as answers to questions regarding operational issues with the MW800. The site also provides the following:

- Recent software / application updates
- Updated embedded firmware for your computer
- The latest device drivers
- Frequently Asked Questions (FAQ)

Appendix A: Safety Instructions

WARNING:

Reduce the risk of fire or electric shock by following basic safety instructions:

- Do not connect or disconnect cables while your device is turned on.
- Protect your device from liquids. Keep your device away from water.
- Do not use any power cord where input or output pins show signs of corrosion or overheating.
- Be sure that all power cord connections are securely plugged into receptacles.
- Never coil a power cord.
- Always route a power cord and communication cables so they will not be damaged.

CAUTION:

Your device generates heat when turned on. Never block or cover ventilation slots and fans.

CAUTION:

The device is very sensitive to uncontrolled shut down. Never turn off the device by turning off the power supply or by disconnection of the power cable.

CAUTION:

The CMOS battery can degrade if your device is unused for more than 3 months. Leaving a battery in a discharged state could shorten a lifetime of the battery.

CAUTION:

Hard drive performance and lifetime could be shortened if your device is not used for long periods of time. Do not leave the device unused for more than 3 months.

CAUTION:

Your device automatically shuts down when the internal temperature exceeds the high limit of the valid range. The device will operate when it cools down.

CAUTION:

Your device dissipates heat during normal operation. When your device is functioning, do not allow it to contact any part of your body for an extended period of time – it could cause discomfort.

CAUTION:

Avoid inserting any card or device into computer slots at an angle – it could damage connectors in your device.

CAUTION:

Normally, if the system does not respond, you can turn the device off by pressing and holding the power button for 6 seconds or more. Be aware, this method of hardware power off may damage your hard disk.

CAUTION:

Do not insert or remove card when the MW800 is in Suspend mode. Before you insert or remove a card, make sure that you exit all software applications that access the card.

Appendix B: Warranty Information

EPS – 34440- B

This warranty applies within the fifty (50) United States, the District of Columbia and Canada.

LIMITED WARRANTY

MOTOROLA COMMUNICATION PRODUCTS

If the affected product is being purchased pursuant to a written Communications System Agreement signed by Motorola, the warranty contained in that written agreement will apply. Otherwise, the following warranty applies.

I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

Motorola Inc. or, if applicable, Motorola Canada Limited ("Motorola") warrants the Motorola manufactured radio communications product, including original equipment crystal devices and channel elements ("Product"), against material defects in material and workmanship under normal use and service for a period of One (1) Year from the date of shipment. Motorola, at its option, will at no charge either repair the Product (with new or reconditioned parts), replace it with the same or equivalent Product (using new or reconditioned Product), or refund the purchase price of the Product during the warranty period provided purchaser notifies Motorola according to the terms of this warranty. Repaired or replaced Product is warranted for the balance of the original applicable warranty period. All replaced parts of the Product shall become the property of Motorola. This express limited warranty is extended by Motorola to the original end user purchaser purchasing the Product for purposes of leasing or for commercial, industrial, or governmental use only, and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by Motorola. Motorola assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of Motorola.

Unless made in a separate written agreement between Motorola and the original end user purchaser, Motorola does not warrant the installation, maintenance or service of the Product. Motorola cannot be responsible in any way for any ancillary equipment not furnished by Motorola, which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system, which may use the Product, is unique, Motorola disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

II. GENERAL PROVISIONS:

This warranty sets forth the full extent of Motorola's responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at Motorola's option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR

DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

III. HOW TO GET WARRANTY SERVICE:

Purchaser must notify Motorola's representative or call Motorola's Customer Response Center at 1-800-247-2346 within the applicable warranty period for information regarding warranty service.

IV. WHAT THIS WARRANTY DOES NOT COVER:

- A) Defects or damage resulting from use of the Product in other than its normal and customary manner.
- B) Defects or damage from misuse, accident, water, or neglect.
- C) Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.
- D) Breakage or damage to antennas unless caused directly by defects in material workmanship.
- E) A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.
- F) Product, which has had the serial number removed or made illegible.
- G) Batteries (they carry their own separate limited warranty).
- H) Freight costs to the repair depot.
- I) A Product, which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with Motorola's published specifications or with the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from Motorola.
- J) Scratches or other cosmetic damage to Product surfaces that do not affect the operation of the Product.
- K) That the software in the Product will meet the purchaser's requirements or that the operation of the software will be uninterrupted or error-free.
- L) Normal and customary wear and tear.
- M) Non-Motorola manufactured equipment unless bearing a Motorola Part Number in the form of an alphanumeric number (i.e., TDE6030B).

V. GOVERNING LAW

In the case of a Product sold in the United States and Canada, this Warranty is governed by the laws of the State of Illinois and the Province of Ontario, respectively.

VI. PATENT AND SOFTWARE PROVISIONS:

Motorola will defend, at its own expense, any suit brought against the end user purchaser to the extent that it is based on a claim that the Product or its parts infringe a United

States patent, and Motorola will pay those costs and damages finally awarded against the end user purchaser in any such suit which are attributable to any such claim, but such defense and payments are conditioned on the following:

A) that Motorola will be notified promptly in writing by such purchaser of any notice of such claim;

B) that Motorola will have sole control of the defense of such suit and all negotiations for its settlement or compromise; and

C) should the Product or its parts become, or in Motorola's opinion be likely to become, the subject of a claim of infringement of a United States patent, that such purchaser will permit Motorola, at its option and expense, either to procure for such purchaser the right to continue using the Product or its parts or to replace or modify the same so that it becomes non-infringing or to grant such purchaser a credit for the Product or its parts as depreciated and accept its return. The depreciation will be an equal amount per year over the lifetime of the Product or its parts as established by Motorola. Motorola will have no liability with respect to any claim of patent infringement which is based upon the combination of the Product or its parts furnished hereunder with software, apparatus or devices not furnished by Motorola, nor will Motorola have any liability for the use of ancillary equipment or software not furnished by Motorola which is attached to or used in connection with the Product. The foregoing states the entire liability of Motorola with respect to infringement of patents by the Product or any of its parts thereof.

Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted Motorola software such as the exclusive rights to reproduce in copies and distribute copies of such Motorola software. Motorola software may be used only in the Product in which the software was originally embodied and such software in such Product may not be replaced, copied, distributed, modified in any way, or used to produce any derivative thereof. No other use including, without limitation, alteration, modification, reproduction, distribution, or reverse engineering of such Motorola software or exercise of rights in such Motorola software is permitted. No license is granted by implication, estoppel or otherwise under Motorola patent rights or copyrights.

Appendix C: FCC Information

CAUTION: Changes or modifications made in the CPU box or Display, not expressly approved by Motorola, will void the user's authority to operate the equipment

EPS – 48759 – O

FCC INTERFERENCE WARNING

The FCC requires that manuals pertaining to Class A and Class B computing devices must contain warnings about possible interference with local residential radio and TV reception. This warning reads as follows:

NOTE: This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 90 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

For detailed product safety and RF exposure for mobile stations with two-way radios installed in vehicles, refer to Electromagnetic Emission (EME) safety leaflet, Motorola publication number 6802967C16.

FCC Compliance Notice

The FCC requires that manuals pertaining to Class A and Class B computing devices must contain warnings about possible interference with local residential radio and TV reception. This warning reads as follows:

NOTE: This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 90 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

This device complies with Part 90 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

For detailed product safety and RF exposure for mobile workstations, with two-way radios, installed in vehicles, refer to Electromagnetic Emission (EME) safety leaflet, Motorola publication number 6802967C16.

Appendix D: Environmental Specifications

- Storage temperature: -40° to 158° F (-40° to +70° C)
- Operating temperature: -22° to 158° F (-30° to +70° C)
- Humidity: 90 to 95% Relative humidity at 50° C for 8 hours
- Shock: 20g peak 1/2 sine wave @ 11ms, 30 impacts
- Vibration: Per TIA/EIA 603 Paragraph 3.3.4 and MIL-STD-810F method 514.5, Category I
- Drip: Per MIL-STD-810F method 506.4 Procedure III
- Dust: Blowing 5 hours in dust (140 mesh silica flour), laden atmosphere dust agitation time is for 2 seconds every 15 minutes
- Salt Fog: 8 hours, 5% Sodium Chloride at 35°C, after exposure, per MIL-STD-810F 505.4, Procedure I
- Flammability: Per UL94-HB
- Solar Radiation: 7 cycles of 24 hours with no functional degradation per MIL-STD-810F, 505.4, Procedure I
- Shock Crash Hazard: 75 g, 6 ms per MIL-STD-810F method 516.5, Procedure V

Appendix E: OSD Specifications

On Screen Display (OSD) Calibration

The MW800 incorporates a transmissive color Thin Film Transistor (TFT) LCD, which provides the best possible readability in lighting conditions typically found in the vehicle environment. The MW 800 comes configured with color palette settings optimized for operation in the vehicle. Pressing the On Screen Display (OSD) calibration button on the display allows adjustment of this and other screen appearance parameters.

User-friendly OSD menu icons represent menu items, consisting of group icons. Each group icon expands to a sub group of icons. Only one group of icons may be adjusted at each OSD session. The main OSD menu is shown next:



Figure 15. Main OSD Menu

To calibrate the screen, perform the following:

- Press the OSD button, located on the lower right hand side of the display - the main OSD dialog menu is displayed.
- Use the volume up or down buttons for moving from one option group or icon to another, or to change calibration slides.
- To select or go down the OSD menu tree, use the OSD button.

OSD Sub-Group Icons

The sub-group OSD icons are shown next:

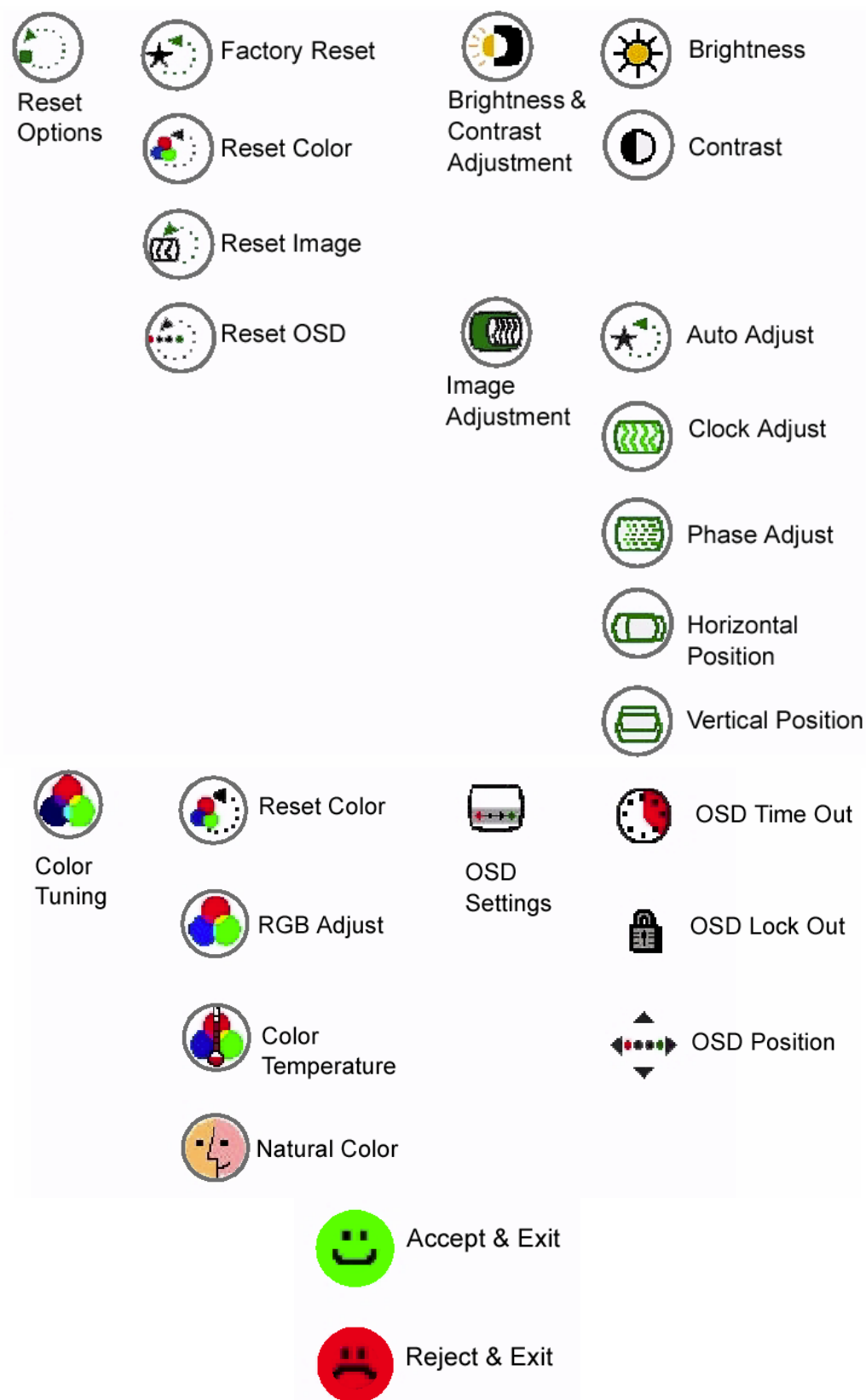


Figure 16. OSD Sub-Group Icons.

Reset options:

Factory reset	Reset all settings to a factory default and re-synchronize on input signal. Accept/Reject menu will appear if this option chosen.
Reset Color	Reset RGB settings.
Reset Image	Resynchronize on input signal.
Reset OSD	Reset OSD position, timeout and lock settings.

Brightness & Contrast:

Brightness	Brightness adjustment
Contrast	Contrast adjustment

Color tuning:

Reset Color	Reset color settings.
RGB Adjust	Adjust Red/Green/Blue color space.
Color Temperature	Choose color scheme. Default is RGB.
Natural Color	Fine-tune human skin palette. This option is especially useful in video applications.

Image adjustment:

Auto Adjust	Resynchronize on input signal.
Clocks Adjust	Adjust pixel-sampling clock relative to input clock. Usually, this mechanism is automatic; manual clock adjustment is not recommended.
Phase Adjust	Adjust pixel-sampling clock relative to input signal phase. May be useful when connecting the MW800 XGA display to a new input source. Note, that shadows surrounding vertical lines are symptom of insufficient phase adjustment.
Horizontal & Vertical Position	Generally, no complicated geometry adjustments are needed for LCD. Slight horizontal or vertical position issues may require tuning.

OSD settings:

OSD Time Out	Specify how long to wait for user input before exiting OSD. The options are 5 seconds, 30 seconds, 60 seconds, and 120 seconds. The default is 5 seconds.
OSD Lock Out	Lock OSD menus from user input.
OSD position	Choose preferred menu position on screen.

Exit options:

Smiley face	Accept and exit.
Unhappy face	Reject and exit.

Warning Icons

Display signal cable not connected

Appears every time the display fails to recognize the input signal. May appear during reset process, suspend/resume sequence or when the display cable was disconnected.

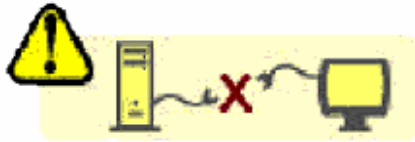


Figure 17. Connection Warning

Mode Error

Input mode is not supported. Please, change input resolution and/or refresh rate.



Figure 18. Mode Error Warning

Change Refresh Rate

Input resolution is OK, but refresh rate is not supported. Please, change input refresh rate in Windows OS to 60 Hz and click OK.



Figure 19. Refresh Rate Warning

Appendix F: Troubleshooting

Many problems can be solved without outside assistance by following the troubleshooting procedures provided via the online help or in the device documents, operating system and software applications. Most software applications contain troubleshooting procedures and explanation of error information. If you suspect a software issue, refer to the operating system or application troubleshooting guides.

NOTE: This manual does not cover operating system issues. Please, refer to Microsoft® Windows® XP Professional or Windows 2000 documentation.

This chapter contains helpful hints to follow when you encounter any problem. If a problem persists after you follow the instructions in this chapter, contact your system administrator for help.

The following table describes MW800 error messages that warn you about conditions that might prevent normal operation.

Table 1. MW800 error messages

Message	Do the following
Vehicle Battery is Low. The system will shutdown in 3 minutes.	The car battery voltage is below of the low operational limit. Please save your work before shutting down
MW800 CPU temperature is high. The system will shutdown in 3 minutes.	The internal temperature is higher than the valid limit. Please save your work before shutting down. Never turn on the device until it cools down to normal operating temperature.
Warning condition is over	Cancel Warning
MW800 CPU temperature is low. The system will shutdown in 3 minutes.	The internal temperature is below of the valid limit. Please save your work before shutting down. Never turn on the device until it heats up to normal operating temperature.
PC Card error was detected. Please remove the PC Card device and then press OK.	Card Bus over-current is discovered. Please remove the PC Card device and than press OK
MW800 hard drive heater may be malfunctioned.	Heater over-current is discovered. Please, contact your system administrator.
Over current is detected in device connected to Firewire port.	The MW800 cannot work with this Firewire device. Please, disconnect the device.

The MW800 display provides the following indication about a failure condition.

Table 2. Indications about failure condition

Indication	What's the problem
Power LED is off	Check the plug and the power cord.
Power LED is steady yellow	Vehicle battery is low (9.4 to 10.3 VDC) during workstation power up.
Temperature LED blinks red	Display temperature is extremely high during power on
Temperature LED blinks yellow	Display temperature is extremely low during operation.
Communication LED is steady blue	CPU box to display USB power problem, or display in programming mode. Check the plugs and CPU cable.
Communication LED is steady yellow	CPU box fails to communicate with display. Check the plugs and CPU cable.
Communication LED is steady purple	CPU box to display USB power and communication problem. Check the plugs and CPU cable.
Link LED is yellow & green	NO valid input signal from CPU box. Check the plugs and CPU cable.

The following table describes MW800 failures without a user notification.

Table 3. MW800 failures without user notification

Problem	Do the following
Cannot turn the device off, the system does not respond	Turn off the device by pressing and holding the power button for 6 seconds or more. Use either CPU or display power buttons. If the device is still not responding, turn off and on the main power switch on the rear side of the CPU unit.

Appendix G: Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document:

BIOS	B asic I nput O utput S ystem
CD	C ompact D isk
CDMA	C ode D ivision M ultiple A ccess
CMOS	C onfiguration M emory O perating S ystem
COM	C ommunication
COTS	C ommercial O f- T he- S helf
CPU	C entral P rocessor U nit
CRT	C athode R ay T ube
DDR	D ouble D ata R ate
DRAM	D ynamic R andom A ccess M emory
DVI	D igital V ideo I nterface
EME	E lectromagnetic E mission
FAQ	F requently A sksed Q uestions
FCC	F ederal C ommunications C ommission
GB	G igabyte
GHz	G igahertz
GPI	G eneral P urpose I nput
GPO	G eneral P urpose O utput
GPRS	G eneral P acket R adio S ervice
GPS	G lobal P ositioning S ystem
iDEN	I ntegrated D igital E nhanced N etwork
IEEE	I nstitute of E lectrical and E lectronic E ngineers
I/O	I nput/ O utput
LAN	L ocal A rea N etwork
LCD	L iquid C rystal D isplay
MB	M egabyte
MPS	M aintenance P rogramming S oftware
MW	M obile W orkstation
NIT	N ear I nfrared T ransmission (also cd/m ² , a measure of luminance)
NMEA	N ational M arine E lectronics A ssociation
NTCS	N ational T elevision S ystem C ommittee
OS	O perating S ystem
OSD	O n- S creen D isplay
PAL	P hase A lternation L ine
PC	P ersonal C ard
PCI	P eripheral C omponent I nterconnect
PWR	P ower
RI	R ing I ndicator
RF	R adio F requency
SIM	S ubscriber I ntity M odule
SVGA	S uper V ideo G raphics A rray
TAIP	T rimble A dvance I nterface P rotocol

TFT	Thin Film Transistor
TSIP	Trimble Standard Interface Protocol
TTL	Transistor-Transistor Logic
UHF	Ultra High Frequency
UL	Underwriters Laboratories
USB	Universal Serial Bus
VCR	Videocassette Recorder
VDC	Volts Direct Current
WWAN	Wireless Wide Area Network
WLAN	Wireless Local Area Network
XGA	eXtended Video Graphics Array

HOW TO REACH US:
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Schaumburg, IL 60196
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Outside the USA call: 847-576-5000

Visit our Web site at
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